

State in Vertex Form

$$f(x) = -3x^2 - 15x + 7$$

$$f(x) = \frac{1}{3}x^2 + 6x + 4$$

Mar 30-9:05 AM

State in Vertex Form

$$\begin{aligned} f(x) &= -3x^2 - 15x + 7 \\ f(x) &= -3(x^2 + 5x) + 7 \\ f(x) &= -3\left(x^2 + 5x + \frac{25}{4}\right) + 7 \\ f(x) &= -3\left(x + \frac{5}{2}\right)^2 + \frac{75}{4} + 7 \\ f(x) &= -3\left(x + \frac{5}{2}\right)^2 + \frac{89}{4} \\ f(x) &= -3\left(x + \frac{5}{2}\right)^2 + 22\frac{1}{4} \\ f(x) &= \frac{1}{3}x^2 + 6x + 4 \\ f(x) &= \frac{1}{3}(x^2 + 18x) + 4 \\ f(x) &= \frac{1}{3}(x^2 + 18x + 81 - 81) + 4 \\ f(x) &= \frac{1}{3}(x + 9)^2 - \frac{81}{3} + 4 \\ f(x) &= \frac{1}{3}(x + 9)^2 - 27 + 4 \\ f(x) &= \frac{1}{3}(x + 9)^2 - 23 \end{aligned}$$

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$$f(x) = \frac{3}{4}x^2 - 12x - 17$$

$$f(x) = \frac{3}{4}(x^2 - 16x) - 17$$

$$f(x) = \frac{3}{4}(x^2 - 16x + 64 - 64) - 17$$

$$f(x) = \frac{3}{4}(x - 8)^2 - 64 - 17$$

$$f(x) = \frac{3}{4}(x - 8)^2 - \frac{152}{4} - 17$$

$$f(x) = \frac{3}{4}(x - 8)^2 - 48 - 17$$

$$f(x) = \frac{3}{4}(x - 8)^2 - 65$$

$$(8, -65)$$

Oct 17-9:57 AM

4.3 Solving Equations using
Quadratic Formula

p. 216

$$\begin{aligned} ax^2 + bx + c &= 0 \\ -3x^2 + 5x + 1 &= 0 \\ 3x^2 - 5x - 1 &= 0 \\ a=3, b=-5, c=-1 \\ x &= \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(-1)}}{2(3)} \\ x &= \frac{5 \pm \sqrt{25 + 12}}{6} \\ x &= \frac{5 \pm \sqrt{37}}{6} \\ x &= \frac{5 + 6.1}{6}, x = \frac{5 - 6.1}{6} \\ x &= \frac{11.1}{6}, x = \frac{-1.1}{6} \\ x &= 1.9, x = -0.2 \\ \text{The roots (zeros) of } -3x^2 + 5x + 1 &= 0 \text{ are } (1.9, 0) \text{ and } (-0.2, 0) \end{aligned}$$

Mar 30-9:39 AM

p 222 & 223

q 3, 7, 8, 9.

$$i) \left(\frac{1}{2}x^2 + 3x + 1 = 0 \right) \times 2$$

$$x^2 + 6x + 2 = 0$$

$$ii) \left(\frac{2}{3}x^2 + \frac{4}{3}x + \frac{2}{3} = 0 \right) \times \frac{3}{2}$$

$$x^2 + 2x + 1 = 0$$

$$x^2 + 6x + 3 = 0$$

Mar 30-9:51 AM

$$-3x^2 + 5x + 1 = 0$$

Find the roots at $y = -15$

$$-3x^2 + 5x + 1 = -15$$

$$-3x^2 + 5x + 1 + 15 = 0$$

$$-3x^2 + 5x + 16 = 0$$

$$x = 2$$

$$3x^2 - 5x - 16 = 0$$

$$a=3$$

$$b=-5$$

$$c=-16$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(-16)}}{2(3)}$$

$$= \frac{5 \pm \sqrt{25 + 192}}{6}$$

$$= \frac{5 \pm \sqrt{217}}{6}$$

$$= \frac{5 \pm 14.7}{6}$$

$$= \frac{5 + 14.7}{6}, \frac{5 - 14.7}{6}$$

$$= \frac{19.7}{6}, \frac{-9.7}{6}$$

$$= 3.3, -1.6$$

$$(3.3, -15), (-1.6, -15)$$

$$f(x) = 60x - 2x^2$$

$$A = 400 \text{ m}^2$$

$$400 = 60x - 2x^2$$

$$0 = 60x - 2x^2 - 400$$

$$0 = -2x^2 + 60x - 400$$

$$0 = 2x^2 - 60x + 400$$

$$a = 2$$

$$b = -60$$

$$c = 400$$

Mar 23-10:43 AM